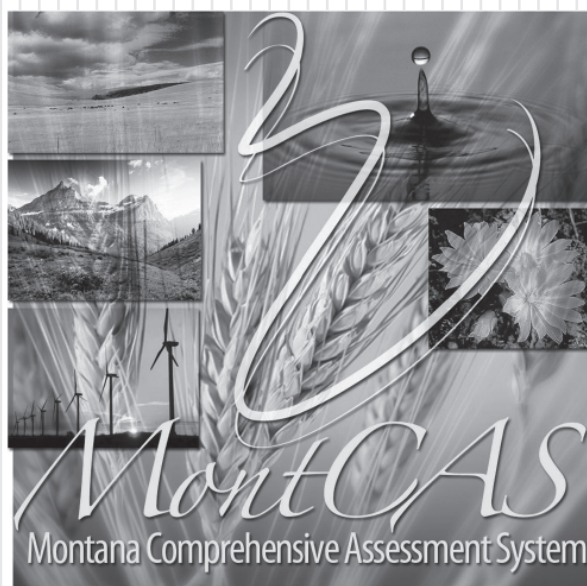


Montana Comprehensive Assessment System (MontCAS CRT)

GRADE 8
COMMON RELEASED ITEMS
SPRING 2013



opi.mt.gov

Montana
Office of Public Instruction
Denise Juneau, State Superintendent

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Reading Directions

This Reading test contains three test sessions. Mark or write your answers in the Answer Booklet. Use a pencil to mark or write your answers.

This test includes two types of questions: multiple-choice and constructed-response questions.

For the multiple-choice questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one answer. After you have chosen the correct answer to a question, find the question number in your Answer Booklet and completely fill in the circle for the answer you chose. Be sure the question number in the Answer Booklet matches the question number in the Test Booklet. The example below shows how to completely fill in the circle.

CORRECT MARK	INCORRECT MARKS
<input checked="" type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>

If you decide to change your answer to a question, erase the wrong mark completely before filling in the circle of the new answer. Be sure you have only one answer marked for each question. **If two circles are bubbled in for the same question, that question will be scored as incorrect.**

If you are having difficulty answering a question, skip the question and come back to it later. Make sure you skip the circle for the question in your Answer Booklet.

For the other types of questions in the Test Booklet, you will be asked to write your answers in the box provided. Read the question carefully. If a question asks you to explain your answer or to show your work, be sure to do so.

You may make notes or use highlighters in your Test Booklet, but you must bubble or write your final answers in your Answer Booklet. **Do not make any stray or unnecessary marks in your Answer Booklet.**

Let's work through a sample question together to be sure you understand the directions.

Sample Question

1. What is the capital of Montana?
 - A. Browning
 - B. Glendive
 - C. Helena
 - D. Missoula

Reading

Read this passage about a 16-year-old girl named Saeng and a plant that reminds her of her homeland of Laos. Then answer the questions that follow.

The Winter Hibiscus

Minfong Ho

She picked a leaf and examined it. It was vaguely heart-shaped, with deeply serrated edges. Where had she seen this kind of leaf before? Saeng wondered. And why, among all these foreign maples and oak leaves, did it seem so very familiar? She scrutinized the bush, but it was no help: If there had been any flowers on it, they had already fallen off.

Holding the leaf in her hand, Saeng left the park and started walking home.

- 3** Her pace was brisk and determined, and she had not planned to stop off anywhere. But along the way, she found herself pausing involuntarily before a florist shop window. On display were bright bunches of cut flowers in tall glass vases—the splashes of red roses, white carnations, and yellow chrysanthemums a vivid contrast to the gray October afternoon. In the shadows behind them were several potted plants, none of which she could identify.

- 4** On an impulse, Saeng swung open the door and entered.

An elderly woman behind the counter looked up and smiled at her. “Yes? Can I help you?” she asked.

- 6** Saeng hesitated. Then she thrust out the heart-shaped green leaf in her hand and stammered, “Do—do you have this plant? I—I don’t know its name.”

The woman took the leaf and studied it with interest. “Why, yes,” she said. “That looks like a rose of Sharon. We have several in the nursery out back.”

She kept up a steady stream of conversation as she escorted Saeng through a side door into an open courtyard, where various saplings and shrubs stood. “Of course, it’s not the best time for planting, but at least the ground hasn’t frozen solid yet, and if you dig a deep enough hole and put in some good compost, it should do just fine. Hardy plants, these roses of Sharon. Pretty blossoms, too, in the fall. In fact—look, there’s still a flower or two left on this shrub. Nice shade of pink, isn’t it?”

Saeng looked at the single blossom left on the shrub. It looked small and washed out. The leaves on the shrub were of the same distinct serrated heart shape, but its flower looked—wrong, somehow.

“Is there—I mean, can it have another kind of flower?” Saeng asked. “Another color, maybe?”

“Well, it also comes in a pale purplish shade,” the woman said helpfully. “And white, too.”

“I think—I think it was a deep color,” she offered, then shook her head. “I don’t remember. It doesn’t matter.” Discouraged and feeling more than a little foolish, she started to back away.

13 “Wait,” the florist said. “I think I know what you’re looking for.” A slow smile deepened the wrinkles in her face. “Come this way. It’s in our greenhouse.”

At the far side of the courtyard stood a shed, the like of which Saeng had never seen before. It was made entirely of glass and seemed to be bathed in a soft white light.

As she led the way there, the florist started talking again. “Lucky we just got through moving in some of our tropical plants,” she said, “or the frost last weekend would have killed them off. Anything in there now you’d have to leave indoors until next summer, of course. Next to a big south-facing window or under some strong neon lamps. Even so, some of the plants won’t survive the long cold winters here. Hothouse flowers, that’s what they are. Not hardy, like those roses of Sharon I just showed you.”

Only half listening, Saeng wished that there was a polite way she could excuse herself and leave. It was late and she was starting to get hungry. Still, she dutifully followed the other woman through the greenhouse door and walked in.

She gasped.

It was like walking into another world. A hot, moist world exploding with greenery. Huge flat leaves, delicate wisps of tendrils, ferns and fronds and vines of all shades and shapes grew in seemingly random profusion.

“Over there, in the corner, the hibiscus. Is that what you mean?” The florist pointed at a leafy potted plant by the corner.

20 There, in a shaft of the wan afternoon sunlight, was a single bloodred blossom, its five petals splayed back to reveal a long stamen tipped with yellow pollen. Saeng felt a shock of recognition so intense, it was almost visceral.

“*Saebba*,” Saeng whispered.

A *saebba* hedge, tall and lush, had surrounded their garden, its lush green leaves dotted with vermillion flowers. And sometimes after a monsoon rain, a blossom or two would have blown into the well, so that when she drew up the well water, she would find a red blossom floating in the bucket.

Slowly, Saeng walked down the narrow aisle toward the hibiscus. Orchids, lanna bushes, oleanders, elephant ear begonias, and bougainvillea vines surrounded her. Plants that she had not even realized she had known but had forgotten drew her back into her childhood world.

When she got to the hibiscus, she reached out and touched a petal gently. It felt smooth and cool, with a hint of velvet toward the center—just as she had known it would feel.

1. The **main** purpose of the first paragraph is to
 - A. show what triggers a memory in Saeng.
 - B. describe the plant Saeng is looking for.
 - C. tell what Saeng is doing in the park.
 - D. explain why Saeng is on her way home.
2. In the first paragraph, what does the word scrutinized mean?
 - A. moved away from
 - B. picked up gently
 - C. studied carefully
 - D. turned slowly
3. In paragraph 3, the “splashes” of color are contrasted with the “gray October afternoon” to show why Saeng is
 - A. familiar with the flowers on display in the window.
 - B. cautious about stopping on her way home.
 - C. compelled to enter the florist shop.
 - D. determined to know the name of the leaf she found.
4. In paragraph 4, the phrase “on an impulse” is used to show that Saeng’s actions are
 - A. uncomfortable.
 - B. uninteresting.
 - C. unnecessary.
 - D. unplanned.
5. In paragraph 6, what is the purpose of the dashes?
 - A. to suggest that Saeng is speaking hesitantly
 - B. to show that words are missing from the sentence
 - C. to indicate that Saeng is speaking slowly
 - D. to emphasize that the words are spoken loudly
6. In paragraph 13, the sentence “A slow smile deepened the wrinkles in her face” shows that the florist
 - A. is interested in what Saeng is saying.
 - B. figures out what Saeng is looking for.
 - C. wants to give Saeng some suggestions.
 - D. is sorry that Saeng feels discouraged.
7. Which word **best** describes how Saeng feels when she enters the greenhouse?
 - A. amazed
 - B. confused
 - C. discouraged
 - D. relieved
8. In paragraph 20, what do the words splayed back mean?
 - A. carefully formed
 - B. colored in
 - C. evenly spaced
 - D. spread out

9. The descriptions in paragraph 20 focus on Saeng's
- A. feelings of impatience with the florist.
 - B. powerful emotional response to the plant.
 - C. disappointment that the plant is different.
 - D. feelings of relief that she can go home.
10. Saeng **most likely** spent her childhood in a place where
- A. summers are quite short.
 - B. rain falls very infrequently.
 - C. tropical plants are everywhere.
 - D. greenhouses are a common sight.
11. What does the winter hibiscus symbolize in this passage?
- A. a difficult challenge
 - B. a special relationship
 - C. a connection to childhood
 - D. an internal conflict
12. What would be the **best** way to find more stories written by Minfong Ho?
- A. look up "Minfong Ho" in an online dictionary
 - B. search the Internet for "stories about hibiscus plants"
 - C. look up "Minfong Ho" in an Internet library catalog
 - D. search an online encyclopedia for an entry on the *saebba* plant
13. What does the reader learn about Saeng throughout this passage? Use details from the passage to support your answer.

Scoring Guide

Score	Description
4	Response provides a thorough explanation of what the reader learns about Saeng throughout this passage. Explanation includes specific, relevant information from the passage.
3	Response provides an explanation of what the reader learns about Saeng throughout this passage. Explanation includes supporting information from the passage, but lacks specificity, relevance, and/or development.
2	Response provides a partial explanation of what the reader learns about Saeng throughout this passage. Explanation includes limited information from the passage, and/or is partially correct.
1	Response makes a vague or minimal statement of what the reader learns about Saeng throughout this passage.
0	Response is totally incorrect or irrelevant.
Blank	No response.

Training Notes

- In the beginning of the passage Saeng seems to be struggling with a need to connect with something that is familiar to her. The leaf she picks stirs up memories. Saeng seems uncertain and a little shy when she enters the florist shop. She is polite, even when she is feeling discouraged; she wants to leave the florist shop and wishes there was a “polite way” to excuse herself. When Saeng sees the plant she has been looking for—the winter hibiscus—she feels an intense shock of recognition. It is just like the plants she remembers from her childhood home. At the end of the passage, Saeng feels a sense of connection and is content.

Details may include, but are not limited to:

- In the beginning of the story, Saeng finds the leaf but does not know why it is familiar.
- She is drawn to the florist shop, but feels hesitant and foolish when she asks the woman there about the plant.
- She is disappointed when the woman points out a plant but it is not the one she is looking for.
- Saeng follows the woman reluctantly, but wishes that she could leave, and seems to no longer be interested in finding the hibiscus plant.
- She does follow the woman, however, and is overwhelmed with the beauty of the lush green plants in the greenhouse.

Example of Score Point 4

There are many hidden secrets and meanings that one could learn about Saeng throughout the passage. She obviously has gotten older, but still seems to faintly remember some things from her childhood. We learn that she is a quiet but nice and well-meaning person. She pays a lot of attention to detail when she sees the contrast of the flowers in the flower shop to the gray druggy sky. One could tell that she may have been a little impatient when the elderly woman kept showing her flowers that were not right, but she did agree to go into the greenhouse with the woman although she is hesitant. But I think she took the time to realize when you wait + are patient for something you love, when you do get it, there most likely will occur a deep connection and relationship with that object or person.

Example of Score Point 3

In this passage the reader learns several things about Saeng. One thing they learn is that she is very determined. When she found a leaf that looked familiar she decided to go into the florist shop even though she wanted to go home. Also the reader finds out that she used to live in a tropical environment. I know this because the story talks about when she would draw water from the well after a monsoon, she would find the leaf of the hibiscus in the water. As you can see this story reveals a lot about Saeng.

Example of Score Point 2

The reader learns that she is curious, and that she is anxious to find out about the plant leaf she found. Also, she most likely grew up in a tropical environment with monsoons. And that she sees things that trigger her childhood memory.

Example of Score Point 1

The reader learns that Saeng is very determined and that she can remember things very well. She also can be very "out-of-mind" sometimes.

Example of Score Point 0

what its like and what it looks like

Read these two poems and then answer the questions that follow.

Autumn

The clock is striking autumn at the apple vendor's fair,
And the fruit is hanging heavy on the bough,
Up among the branches a summer bee still sings,
But winter is a whisper in its wings.

- 5 For the clock is striking autumn at the apple vendor's fair,
And the apples that are hanging soon will fall,
And the white cocoon of winter
Weave around the bending trees,
And the apples will lie broken on the ground.

—*Patricia Hubbell*

One of the poems used for the following items was “Moment” by Barbara Angell, taken from *Imaginary Animals: Poetry and Art for Young People* (1978, Harry N. Abrams, Inc.). Due to copyright restrictions, we are unable to reprint the poem in this document.

14. In the first line of “Autumn,” what does the word vendor mean?
- A. gardener
 - B. protector
 - C. seller
 - D. visitor
15. In “Autumn,” the line “But winter is a whisper in its wings” suggests that
- A. autumn is beginning.
 - B. summer lingers on.
 - C. winter is not far off.
 - D. winter can be heard.
16. In line 7 of “Autumn,” the “cocoon of winter” suggests the way in which
- A. the winter snow will cover the trees.
 - B. the frozen apples will fall to the ground.
 - C. the apple orchard will become a quiet place.
 - D. the winter sky will become full of clouds.
17. In “Moment,” the cat represents the arrival of September in the way the cat
- A. appears quietly and unexpectedly.
 - B. is spotted and slinks along the ledge.
 - C. is a welcome sight to the speaker.
 - D. passes through a shaft of light.
18. The tone in “Moment” is **best** described as
- A. angry.
 - B. joyful.
 - C. reflective.
 - D. worried.
19. The title “Moment” **mainly** refers to when the speaker realizes
- A. the sun is shining.
 - B. a cat is moving.
 - C. the season is changing.
 - D. a clock is showing the hour.
20. The **main** purpose of both poems is
- A. to reflect upon the change of seasons.
 - B. to praise the season of autumn.
 - C. to express excitement about the seasons.
 - D. to teach a lesson about autumn.

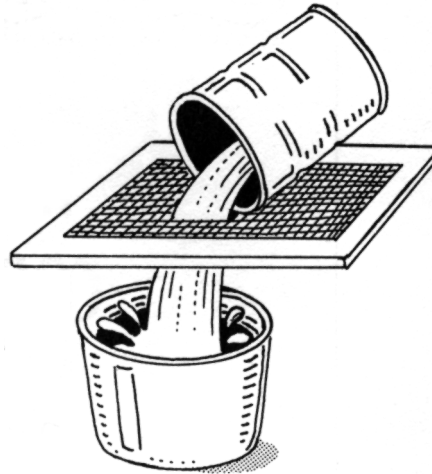
Read this article about preparing natural clay. Then answer the questions that follow.

Preparing Natural Clay

Helen Roney Sattler

You Will Need:

natural clay
1 two-pound coffee can
old newspapers
a hammer or a rock to be used as a hammer
1/4-inch mesh sieve
2 three-pound coffee cans with lids
water
window-screen wire
large plaster bowls or cloth-lined bowls



How to Make It:

Many areas of the country contain natural clay banks. These vary in color—gray, green, red, or yellow—depending upon the mineral found in combination with the clay. This natural clay can be used to make pottery or sculpture.

1. Select a clay deposit that is as free from impurities (sand, gravel, dirt, plant roots, and stems) as possible. Dig enough clay to fill a two-pound coffee can.
2. Spread out the clay on newspapers and place it in the sun to dry completely.
3. The clay will dry in hard lumps. With a hammer or rock, break these lumps into a fine powder, being careful not to crush pebbles or rock chips into the clay.
4. Sift the powdered clay through the sieve. Discard all pebbles.
5. Fill one three-pound coffee can $\frac{2}{3}$ full with the sifted clay. Completely cover clay with water. As the water soaks into the clay, pour on more water so that the clay remains immersed.
6. Using your hands, stir the clay to evenly distribute the water throughout it.
7. Let the mixture soak for about 2 hours, or until it is the consistency of thick cream.
8. To break up lumps, pour mixture through a piece of window-screen wire into another coffee can or a bucket.
9. Let this strained mixture sit overnight, or until all the clay has settled to the bottom. Then pour off the clear water that has accumulated on top. Do not stir up the thick “slip” underneath.
10. Pour the remaining thick slip into large plaster bowls or bowls lined with dry cloths. Plaster bowls are best if you have them, but cloth-lined bowls are satisfactory. As the cloth absorbs the water, the slip stiffens and separates from the cloth or plaster. Store the slip, or moist clay, in covered coffee cans for several days. The clay improves with age. You should store it moist, since the clay will dry out when you cut and wedge it.
11. All clay must be “wedged” to remove air bubbles before it can be used. Cut the clay into pieces and throw each piece with force against a table many times until you are sure no more air bubbles remain. After this is done, your clay will be ready to use.

If the clay will not hold its shape, you can improve it by adding a little fine sand. If the clay crumbles at the edges when you press it between your fingers, it is too sandy. If the clay is too sandy to work with, there is little that can be done to improve it. It is best to discard it and select another clay deposit. With a little experimentation and practice, you will soon learn which kind of natural clay suits you best.

21. Which step should be done before sifting the powdered clay through a sieve?
- A. Cover all the clay with water.
 - B. Break the hard lumps in the clay.
 - C. Pour the clay into a plaster bowl.
 - D. Spread the water through the clay.
22. In step 5, what does the word immersed mean?
- A. covered
 - B. dampened
 - C. hardened
 - D. strained
23. In step 6, why do the directions say to use your hands to stir the clay?
- A. to more easily remove pebbles from the clay
 - B. to better tell whether the water is evenly mixed with the clay
 - C. to be able to remove air bubbles from the clay
 - D. to get a better idea whether the clay will work correctly
24. In step 9, why is the word “slip” in quotation marks?
- A. to indicate that is what the clay mixture is called at that point
 - B. to show that the water has made the clay mixture smooth
 - C. to suggest that the mixture will move on top of the water
 - D. to emphasize that the mixture is no longer considered clay
25. Which step does the graphic illustrate?
- A. step 2
 - B. step 4
 - C. step 8
 - D. step 11

26. According to the article, what can be done if clay crumbles when you press it?
- A. Water can be poured over the top.
 - B. Sand can be added to the mixture.
 - C. The clay can be sifted again.
 - D. The process can be started over.

27. What is the **main** purpose of this article?
- A. to instruct the reader about a process
 - B. to entertain the reader with a fun activity
 - C. to persuade the reader to use a product
 - D. to inform the reader about a natural resource

Mathematics Directions

This Mathematics test contains three test sessions. Mark or write your answers in the Answer Booklet. Use a pencil to mark or write your answers.

This test includes three types of questions: multiple-choice, short-answer, and constructed-response questions.

For the multiple-choice questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one answer. After you have chosen the correct answer to a question, find the question number in your Answer Booklet and completely fill in the circle for the answer you chose. Be sure the question number in the Answer Booklet matches the question number in the Test Booklet. The example below shows how to completely fill in the circle.

CORRECT MARK	INCORRECT MARKS
<input checked="" type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>

If you decide to change your answer to a question, erase the wrong mark completely before filling in the circle of the new answer. Be sure you have only one answer marked for each question. **If two circles are bubbled in for the same question, that question will be scored as incorrect.**

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For the other types of questions in the Test Booklet, you will be asked to write your answers in the box provided. Read the question carefully. If a question asks you to explain your answer or to show your work, be sure to do so.

You may make notes or use highlighters in your Test Booklet, but you must bubble or write your final answers in your Answer Booklet. **Do not make any stray or unnecessary marks in your Answer Booklet.**

Let's work through a sample question together to be sure you understand the directions.

Sample Question

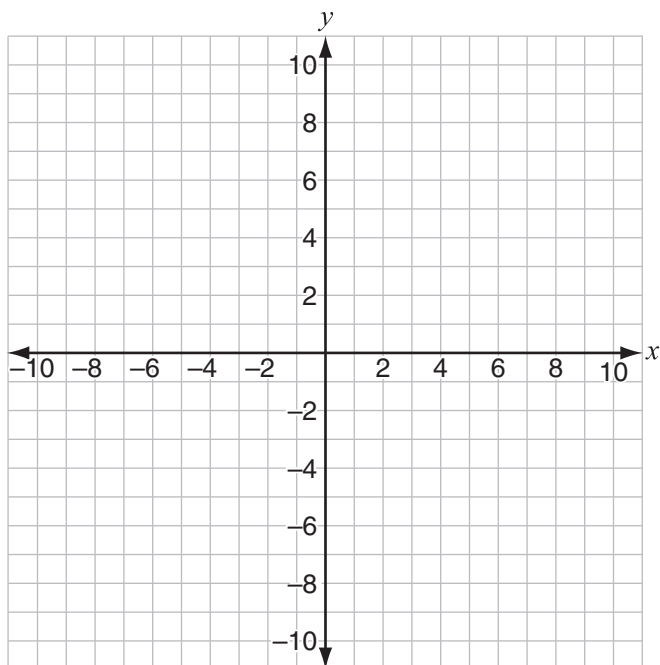
1. Montana is the **fourth** largest state. How many states are larger than Montana?
 - A. 1
 - B. 3
 - C. 10
 - D. 42

Mathematics (No Calculator)

1. Which expression is equivalent to 2^4 ?

- A. 2×4
- B. $2 \times 2 \times 2 \times 2$
- C. $\sqrt{32}$
- D. $\sqrt{64}$

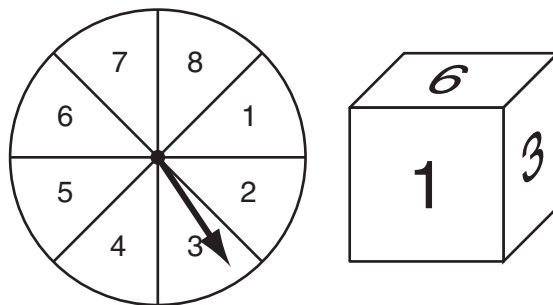
2. You may use the grid below to answer this question.



Point N , with the coordinates $(2x, -4y)$, is reflected across the x -axis. What are the coordinates of the image of point N ?

- A. $(4y, -2x)$
- B. $(2x, 4y)$
- C. $(-2x, -4y)$
- D. $(-4y, 2x)$

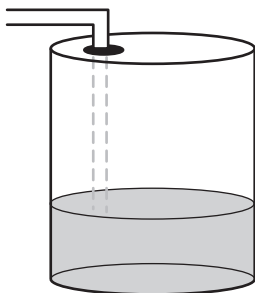
3. In an experiment, Carl uses the spinner and the number cube shown below. The spaces on the spinner are congruent, and the number cube's faces are numbered 1 through 6.



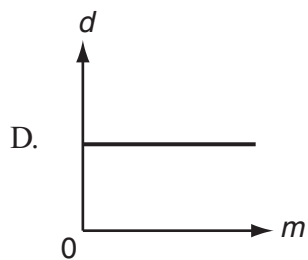
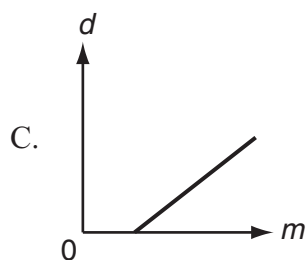
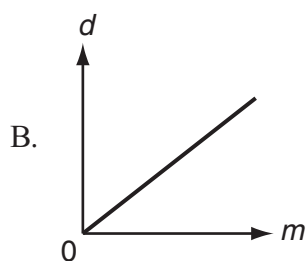
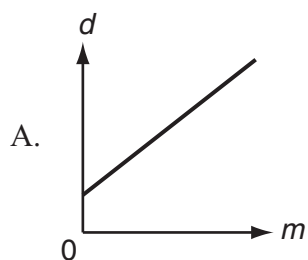
Carl spins the spinner and rolls the number cube exactly one time. What is the probability that he spins a number less than 6 **and** rolls an even number?

- A. $\frac{1}{15}$
- B. $\frac{1}{8}$
- C. $\frac{5}{16}$
- D. $\frac{4}{7}$

4. At noon, the cylindrical tank shown below contained water to a depth of 8 inches.



During the afternoon, it continued to fill at a constant rate, increasing the depth of the water 2 inches per minute. Which graph could represent the depth of the water, d , over m minutes?



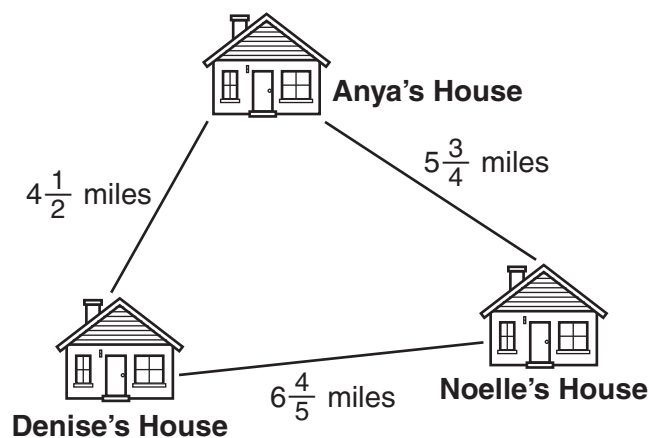
5. Compute:

$$-16 - 4^3 \div 2$$

6. Solve this equation.

$$4x + 20 = 820$$

7. The distances between the houses of three friends are shown on the map below.



Denise rode her bike **roundtrip** from her house to Noelle's house.

- What is the total distance, in miles, Denise rode her bike?
- What is the difference in the distance, in miles, from Noelle's house to Denise's house and the distance from Noelle's house to Anya's house? Show or explain how you found your answer.

Anya rode her bike from her house to Noelle's house and then to the library. The library is halfway between Noelle's house and Denise's house.

- What is the total distance, in miles, Anya rode her bike to get to the library? Show or explain how you found your answer.

Scoring Guide

Score	Description
4	5 points
3	4 points OR Correct answer to all 3 parts
2	2–3 points
1	1 point
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes

- Part a: 1 point correct answer, $13\frac{3}{5}$ (miles) [also accept $10\frac{1}{4}$ (miles) or $17\frac{1}{20}$ (miles)] **or equivalent**
- Part b: 2 points correct answer, $1\frac{1}{20}$ (miles) **or equivalent**, with work shown or explanation given
OR
1 point correct answer, $1\frac{1}{20}$ (miles), without work shown or explanation given
OR
correct strategy with incorrect or missing answer
- Part c: 2 points correct answer, $9\frac{3}{20}$ (miles) **or equivalent**, with work shown or explanation given
OR
1 point correct answer, $9\frac{3}{20}$ (miles), without work shown or explanation given
OR
correct strategy with incorrect or missing answer

Sample Response:

$$\text{b. } 6\frac{4}{5} - 5\frac{3}{4}, \frac{34}{5} - \frac{23}{4}, \frac{136}{20} - \frac{115}{20} = \frac{21}{20} = 1\frac{1}{20} \text{ miles}$$

$$\text{c. } 5\frac{3}{4} + \frac{1}{2}\left(6\frac{4}{5}\right) = 5\frac{3}{4} + \frac{1}{2}\left(\frac{34}{5}\right) = 5\frac{3}{4} + \frac{34}{10} = 5\frac{3}{4} + 3\frac{2}{5} = 5\frac{15}{20} + 3\frac{8}{20} = 8\frac{23}{20} = 9\frac{3}{20} \text{ miles}$$

Example of Score Point 4

a. $\frac{34}{5} + \frac{34}{5} = \frac{68}{5}$ simplify $5 \overline{) 68} \begin{matrix} 13 \\ \underline{5} \\ 13 \\ \underline{10} \\ 3 \end{matrix}$ $13\frac{3}{5}$ total miles.

b. $\frac{34}{5} - \frac{23}{4}$
 $\frac{136}{20} - \frac{115}{20} = \frac{21}{20}$
 $\frac{23}{4} = \frac{115}{20}$
 $\frac{136}{20} - \frac{115}{20} = \frac{21}{20}$

the difference in distance is $\frac{21}{20}$ miles

c. $\frac{34}{5} \times \frac{1}{2} = \frac{34}{10} = 3\frac{4}{10}$

$\frac{34}{10} + \frac{23}{4}$
 $\frac{136}{40} + \frac{230}{40} = \frac{366}{40}$ simplify $9\frac{6}{10}$ miles
 $\frac{40}{1} \times \frac{9}{10} = 360$
 $\frac{40}{1} \times \frac{8}{10} = 320$
 $40 \overline{) 366}$

Example of Score Point 3

$$a.) 6\frac{4}{5} + 6\frac{4}{5} = 13\frac{3}{5}$$

$$13\frac{3}{5} \text{ miles}$$

$$b.) 6\frac{4}{5} - 5\frac{3}{5} = 1\frac{1}{5}$$

$$1\frac{1}{5} \text{ miles}$$

$$c.) 5\frac{3}{4} + (\frac{1}{2} \cdot 6\frac{4}{5})$$

$$5\frac{3}{4} + 3\frac{2}{5}$$

$$5\frac{15}{20} + 3\frac{8}{20}$$

$$8\frac{23}{20}$$

$$9\frac{3}{20} \text{ miles}$$

Example of Score Point 2

A. $13\frac{3}{5}$ miles

B. $1\frac{1}{20}$ miles

C. $6\frac{3}{8}$ miles

Example of Score Point 1

A) $7\frac{4}{6}$

b) $1\frac{1}{20}$

c) $6\frac{4}{5}$

$$\begin{array}{r} 5\frac{7}{4} \\ + 4\frac{1}{2} \\ \hline 15\frac{8}{20} \end{array}$$

Example of Score Point 0

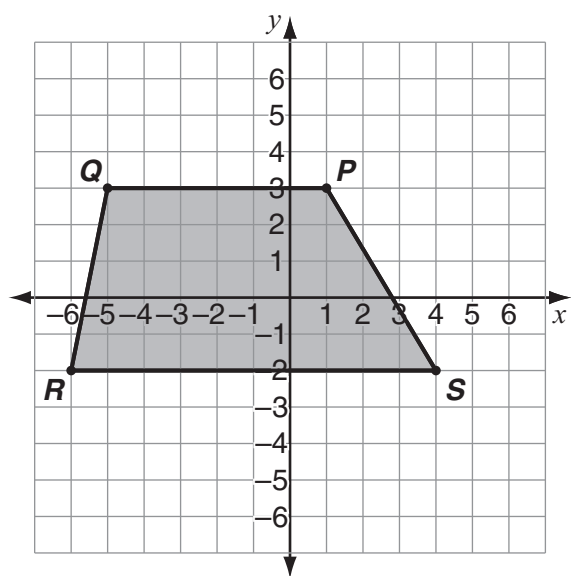
a. $12 \frac{8}{10} = \frac{4}{5}$ $12 \frac{4}{5}$ miles

B. $6 \frac{4}{5} - 5 \frac{3}{4} = 1 \frac{1}{1} = 2$ miles

C. $3 \frac{2}{3} + 5 \frac{3}{4} = 8 \frac{5}{7}$ miles

Mathematics (Calculator)

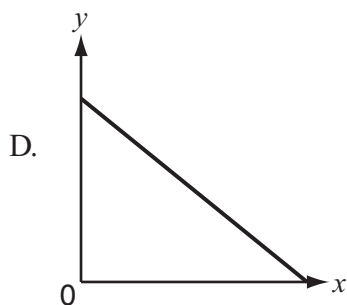
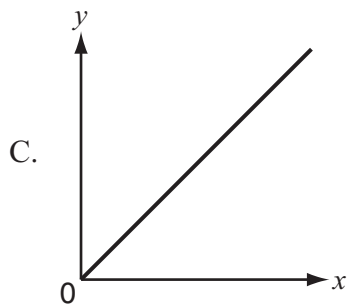
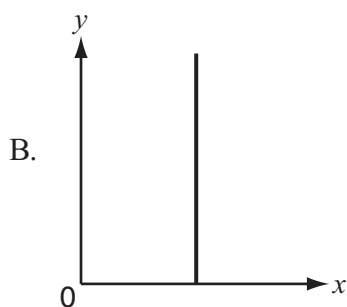
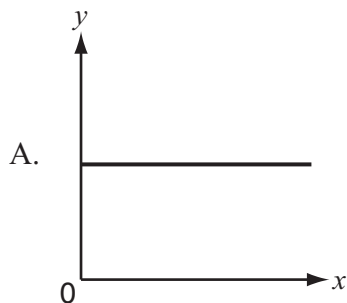
8. Study trapezoid $RQPS$ below.



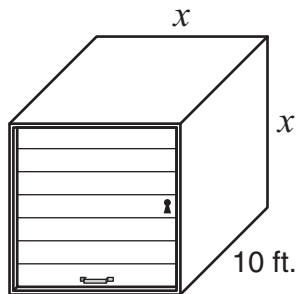
What are the coordinates of the midpoint of \overline{QP} ?

- A. $(3, -2)$
- B. $(2, -3)$
- C. $(-2, 3)$
- D. $(-3, 2)$

9. Which graph shows x increasing as y decreases?



10. The inner dimensions of a storage unit are shown below.



not drawn to scale

The height and width have the same measure, x . The volume is 360 cubic feet. What is the height of the storage unit?

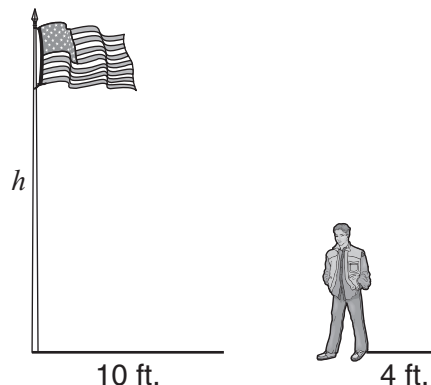
- A. 4 feet
 - B. 6 feet
 - C. 18 feet
 - D. 36 feet
11. The expression below models the total cost, in dollars, to rent bowling shoes and bowl n games.

$$1.50 + 3.50n$$

What is the total cost to rent bowling shoes and bowl 5 games?

- A. \$10.00
- B. \$17.50
- C. \$19.00
- D. \$25.00

12. A man is using the length of his shadow and the length of the shadow of a flagpole to estimate the height of the flagpole, as shown below.

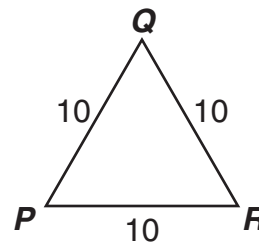


not drawn to scale

The man is 6 feet tall. What is the height, h , of the flagpole?

- A. 7 feet
- B. 12 feet
- C. 15 feet
- D. 60 feet

13. Study triangle PQR below.



What are the measures of the angles of a triangle that is **geometrically similar** to triangle PQR ?

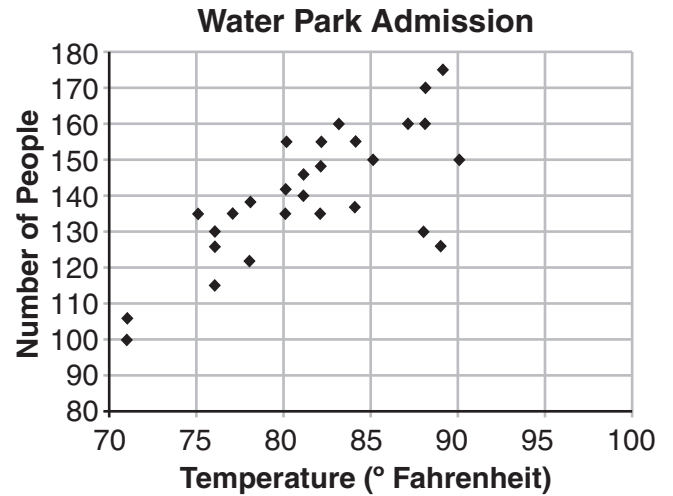
- A. 40° , 70° , and 70°
- B. 45° , 45° , and 90°
- C. 30° , 60° , and 90°
- D. 60° , 60° , and 60°

14. Carina picked apples from a tree and placed them in baskets.
- Each basket held 9 apples.
 - There were 4 apples left after filling the baskets.

Which could be the total number of apples Carina picked?

- A. 26
- B. 36
- C. 45
- D. 85

15. The manager of a water park graphed the relationship between daytime temperatures and the number of people admitted to the park last summer.



He only needed to hire extra lifeguards when there were more than 150 people at the park. Which statement is true?

- A. Extra lifeguards were only needed when the temperature was above 85 degrees.
- B. Extra lifeguards were always needed when the temperature was above 85 degrees.
- C. Extra lifeguards were never needed when the temperature was below 80 degrees.
- D. Extra lifeguards were always needed when the temperature was between 80 and 85 degrees.

16. Which table shows a linear relationship between the number of miles driven and the amount of money charged by a taxi driver?

A.

Miles	Amount Charged (\$)
0.5	2.00
1.0	3.00
2.0	4.00
4.0	5.00

B.

Miles	Amount Charged (\$)
0.5	2.00
1.0	4.00
2.0	6.00
4.0	8.00

C.

Miles	Amount Charged (\$)
0.5	2.00
1.0	6.00
2.0	10.00
4.0	14.00

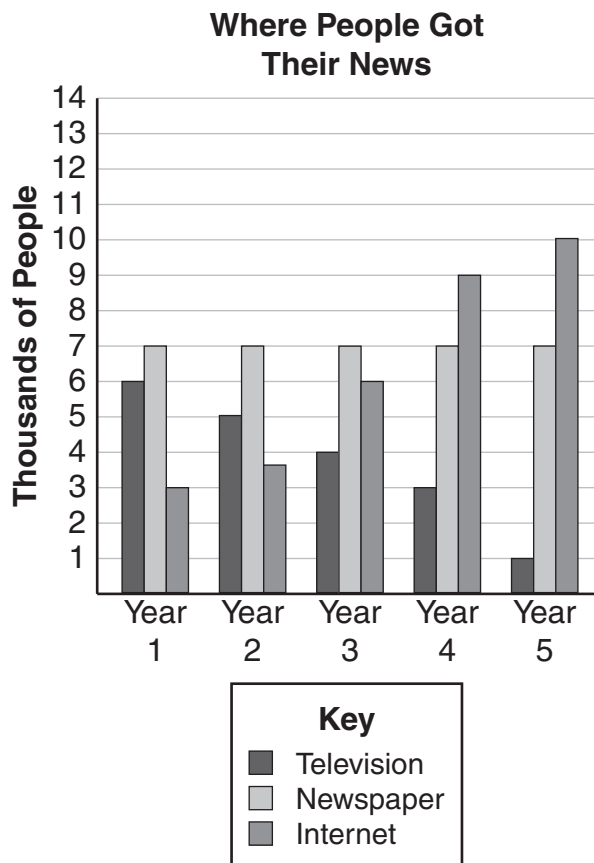
D.

Miles	Amount Charged (\$)
0.5	2.00
1.0	4.00
2.0	8.00
4.0	16.00

17. Paula asked track team members in which lane they most like to run. The choices were lanes 1, 2, 3, 4, 5, and 6. Which measurement would best represent the most popular lane?

- A. mean
- B. median
- C. mode
- D. range

18. The graph below shows where people in a certain city got their news over a five-year period.



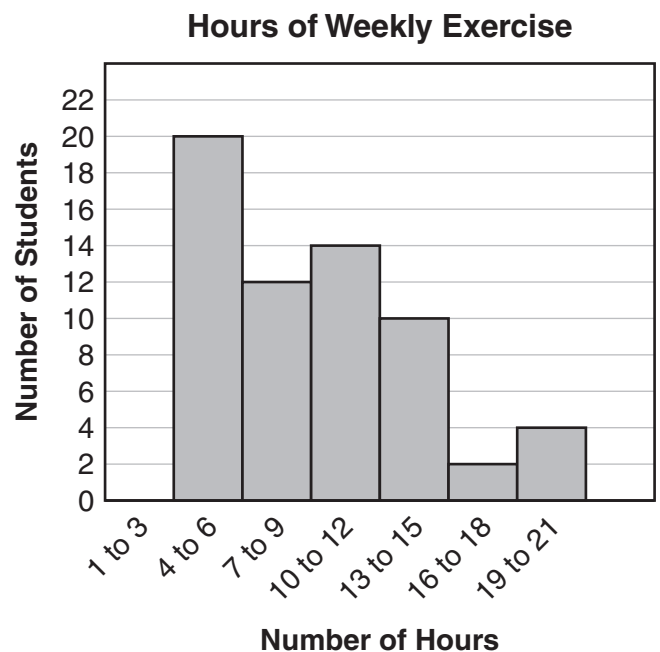
Which prediction for Year 6 can be made based on the information in the graph?

- The number of people using newspapers as their source for news will decrease.
- The Internet will be the leading source for news.
- The number of televisions made will decrease.
- The number of newspaper companies will remain the same.

19. The cost of a taxi ride to the airport can be determined by the equation $c = 0.95m + 2.00$, where c is the cost in dollars of the taxi ride, and m is the number of miles traveled. Maria paid \$13.40 for a taxi ride to the airport. How far does Maria live from the airport?

- 11.4 miles
- 12.0 miles
- 12.1 miles
- 16.2 miles

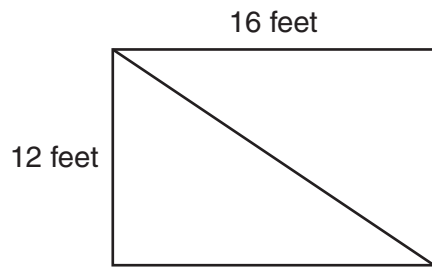
20. Students were asked how many hours they spend exercising each week. The results are displayed in the histogram below.



How many of the students surveyed exercise **at least** 10 hours a week?

- 14
- 16
- 30
- 32

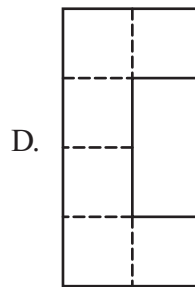
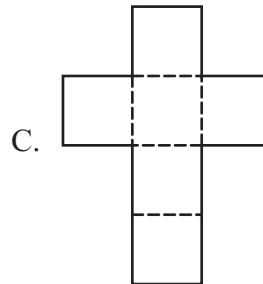
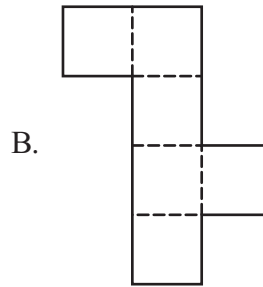
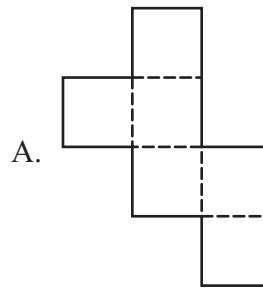
21. Macy will divide her rectangular garden in half by putting a rope from one corner to the opposite corner, as shown below.



What is the distance from one corner to the opposite corner?

- A. 14 feet
 B. 15 feet
 C. 20 feet
 D. 28 feet
22. Which shape can have parallel sides that are **not** congruent?
- A. parallelogram
 B. rectangle
 C. rhombus
 D. trapezoid

23. Which net will **not** fold to make a cube?



Science Directions

This Science test contains three test sessions. Mark or write your answers in the Answer Booklet. Use a pencil to mark or write your answers.

This test includes two types of questions: multiple-choice and constructed-response questions.

For the multiple-choice questions, you will be given four answer choices—A, B, C, and D. You are to choose the correct answer from the four choices. Each question has only one answer. After you have chosen the correct answer to a question, find the question number in your Answer Booklet and completely fill in the circle for the answer you chose. Be sure the question number in the Answer Booklet matches the question number in the Test Booklet. The example below shows how to completely fill in the circle.

CORRECT MARK	INCORRECT MARKS
<input checked="" type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>

If you decide to change your answer to a question, erase the wrong mark completely before filling in the circle of the new answer. Be sure you have only one answer marked for each question. **If two circles are bubbled in for the same question, that question will be scored as incorrect.**

If you are having difficulty answering a question, skip the question and come back to it later. Make sure you skip the circle for the question in your Answer Booklet.

For the other types of questions in the Test Booklet, you will be asked to write your answers in the box provided. Read the question carefully. If a question asks you to explain your answer or to show your work, be sure to do so.

You may make notes or use highlighters in your Test Booklet, but you must bubble or write your final answers in your Answer Booklet. **Do not make any stray or unnecessary marks in your Answer Booklet.**

Let's work through a sample question together to be sure you understand the directions.

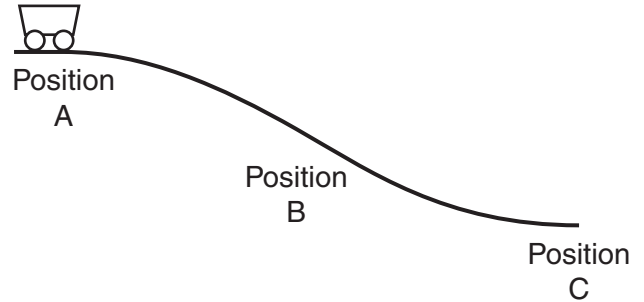
Sample Question

1. What is the state animal of Montana?
 - A. elephant
 - B. grizzly bear
 - C. zebra
 - D. giraffe

Science

1. Radioactive waste left over from nuclear power plants has to be stored in a place that will isolate the waste for many years as the waste decays naturally. Which disposal method provides the **safest** storage for radioactive waste?
 - A. diluting the waste by pouring it into a large lake
 - B. relocating the waste by burying it under mountains in a desert
 - C. reducing the amount of waste by spraying it on top of a tall mountain
 - D. filtering the waste by letting it sink into the groundwater
2. Which information makes an organism useful as an index fossil?
 - A. the age of the organism when it died
 - B. how long it took for the organism to form the fossil
 - C. the rate at which radioactive substances decayed in the organism
 - D. the time periods when the organism first appeared and when it went extinct
3. How do most scientists today believe that the solar system formed?
 - A. from a spinning cloud made of gas and dust
 - B. from a black hole that collapsed and turned inside out
 - C. from a massive planet that exploded into smaller pieces
 - D. from a large star that spread out and then formed planets

4. The diagram below shows a cart at rest on top of a hill. The cart rolls down the hill from position A through position C.



Which sentence describes the energy of the cart?

- A. The cart's potential energy is greatest at position C.
 - B. The cart's potential energy is the same at positions A, B, and C.
 - C. The cart's kinetic energy at position A is the same as at position B.
 - D. The cart's kinetic energy is increasing from position B to position C.
5. Why do clouds form when air masses rise above mountains?
 - A. The water vapor in the air masses cools and condenses.
 - B. The rocks in the mountains hold heat and warm the air masses.
 - C. The air masses are closer to the Sun, and liquid water evaporates.
 - D. The atmosphere above the mountains is at high pressure and pushes down on the air masses.

6. The table below shows properties of two different substances at room temperature.

Properties of Two Substances

Property	Substance 1	Substance 2
Color	White	Gray
Solubility	High	None
Conductivity	High	High
Density of 1 gram	Low	High

Which conclusion is **best** supported by this data?

- A. Substance 1 is a type of wood.
 - B. Substance 1 can stay solid in water.
 - C. Substance 2 is a type of metal.
 - D. Substance 2 can float in water.
7. Traditionally, when someone in the Nakota tribe broke a leg bone, healers would build a splint out of rawhide and place the splint behind the leg. The splint would then be attached by leather strips. What does this method **best** indicate about the Nakota's understanding of medicine?
- A. They understood that broken bones require surgery to be fixed.
 - B. They understood that broken bones must be covered to prevent infection.
 - C. They understood that broken bones have to be placed in casts to grow again.
 - D. They understood that broken bones should be held in place to heal properly.

8. A student investigated how effective a chemical was against insects on her rose plants. She sprayed her rose plants with the chemical. After one week, she counted the number of insects on each rose plant. What is one of the weaknesses in her experimental design?
- A. She should have left some of the rose plants unsprayed as controls.
 - B. She should have sprayed the chemical on other kinds of plants in her garden.
 - C. She should have included cocoons and eggs on the leaves in her insect count.
 - D. She should have sprayed each rose plant with a different chemical for more variables.
9. How is iron obtained from iron ores?
- A. Minerals are converted into rocks.
 - B. Minerals are extracted from rocks.
 - C. Minerals in sedimentary rocks are exposed to water and rust.
 - D. Minerals in metamorphic rocks are subjected to heat and pressure.


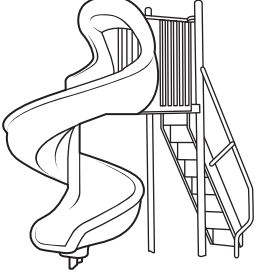

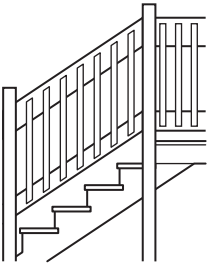
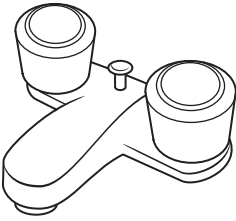

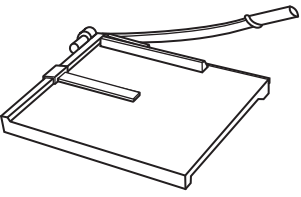
10. The table below lists information about the gene for height in some plants.

Gene	Trait	Expression
T	Tall	Dominant
t	Short	Recessive

A plant breeder wants to cross two plants to produce short offspring. Which of the following are genotypes of parent plants that will produce short offspring?

- A. T and t
- B. T and T
- C. TT and tt
- D. Tt and Tt

11. There are six simple machines: inclined planes, wedges, screws, levers, wheels and axles, and pulleys. Seven objects are shown below. Some of the objects are compound machines that consist of more than one simple machine.

			
Scissors	Slide	Bottle top	Stairs and walkway
			
Faucet	Bicycle	Paper cutter	

Choose four objects from the table that represent four **different** types of simple machines.

- List each object **and** identify the type of simple machine the object represents.
- Describe the part or parts of each of the four objects that are the simple machines you identified in part (a). You may include a labeled drawing in your response.

Scoring Guide

Score	Description
4	Response demonstrates a thorough understanding of identifying and describing simple machines. The student identifies four objects that represent four different simple machines and describes which parts of the objects are the simple machines identified. Response contains no errors or omissions.
3	Response demonstrates a general understanding of identifying and describing simple machines. Response contains minor errors or omissions.
2	Response demonstrates a limited understanding of identifying and describing simple machines. Response contains major errors or omissions.
1	Response demonstrates a minimal understanding of identifying and describing simple machines.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes

Sample responses include the following:

The following objects are inclined planes: slide and stairs



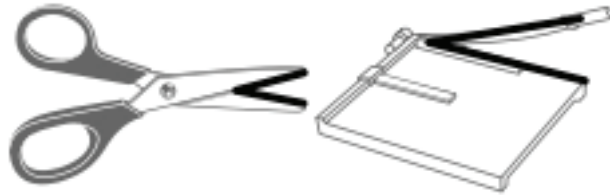
These objects are inclined planes because they have slanted surfaces or flat surfaces that are higher on one end, which helps you move an object to a higher or lower place.

The following objects are levers: scissors and paper cutter [also accept handlebars and handbrakes on the bicycle]



These objects are levers because they have rigid bars that are able to rotate around a fixed point (fulcrum).

The following objects are wedges: scissors and paper cutter



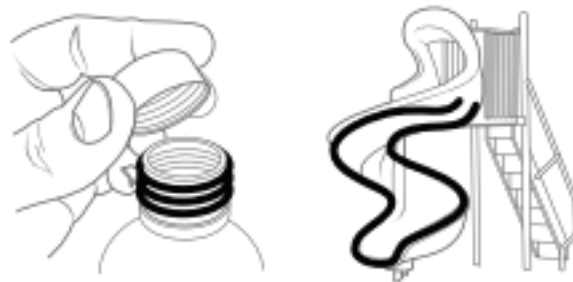
These objects are wedges because they are thick at one end and then become thinner at the other end. [Students may classify these objects as inclined planes since wedges can be thought of as an inclined plane (or two inclined planes back to back) that moves.]

The following objects are wheels and axles: bicycle tires and sink knobs of the faucet



These objects are wheels and axles because they are made of circular objects that rotate around a common point or axis.

The following objects are screws: bottle top and slide



These objects are screws because they are types of inclined planes wrapped around a cylinder. [Students may also classify these as inclined planes.]

The following objects are pulleys: bicycle chains and gears



These objects are pulleys because they consist of a chain that fits around the grooves of a gear.

Scoring:

Part (a): 4 points (1 point for each simple machine — all or nothing)

Part (b): 4 points (1 point for each description)

Scaling:

8 points = 4

6–7 points = 3

3–5 points = 2

1–2 points = 1

Example of Score Point 4

A. A slide represents an inclined plane and a bottle top represents a screw. The bicycle represents a wheel & axle and the scissors represent a wedge.

B.

The image shows four hand-drawn diagrams of simple machines, each enclosed in a rectangular box. The first box contains a drawing of a pair of scissors with the word 'wedge' written next to it. The second box contains a drawing of a slide with the words 'Inclined plane' written above it. The third box contains a drawing of a bottle top with the word 'screw' written above it. The fourth box contains a drawing of a bicycle with the words 'wheel & axle' written above it.

Example of Score Point 3

A. The slide represents an inclined plane, the paper cutter represents a lever, the bottle top represents a screw, and a bicycle represents wheels.

B. The inclined plane part of the slide would be the twisting part going down at an angle. The lever part of the paper cutter is straight part that goes up and down. The screw part of the bottle top is the lid twisting on to the part that needs the lid. The bicycle represents a wheel because of the two things in the front and back that are round with a lot of small lines running through them that turn with the pulley system attached.

Example of Score Point 2

a) slide, bottle top, bicycle, + paper cutter

b) slide - inclined plane

bottle top - screws

bicycle - wheels + lever

paper cutter - lever





Example of Score Point 1

a.) The bicycle, stair and walkway, bottle top, and the slide are simple machines because the bicycle is the wheel and axle, the stair and walkway is a pulley, the bottle top is a screw, and the slide is a pulley and inclined plane.

b.)

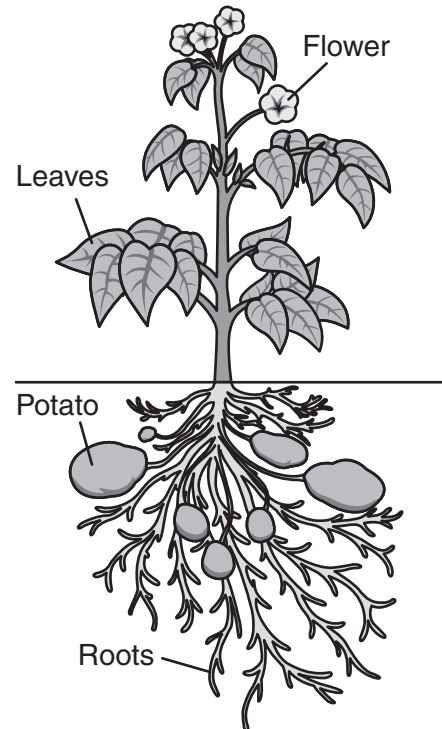
Example of Score Point 0

A. Scissors - a thing use for cutting, Slide - a long plastic tube that is smooth that kids play on, Bottle top - a lid that is use to keep the liquid inside the bottle, Stairs and walkway - a thing that can get you up stairs, Faucet - a device that gives you water, Bicycle - a machine that can get you around the town, Paper cutter - a device that makes perfect clean cuts on paper.

B. Scissors , Bottle top , Faucet , paper cutter 

12. Which function is **not** carried out within cells?
- A. eliminating waste
 - B. producing energy
 - C. pumping blood
 - D. storing genetic information
13. A student is investigating whether music affects a dog. Which method would be **best** for the student to use?
- A. Observe the dog when the same music plays all the time.
 - B. Observe the dog when different types of music play at different times.
 - C. Observe the dog when different types of music play at the same time.
 - D. Observe the dog when the same music plays at different times, and when no music is playing at different times.
14. What is the major source of energy in a forest ecosystem?
- A. sunlight
 - B. nuts and berries
 - C. plant-eating animals
 - D. animals that eat other animals

15. The diagram below shows a white potato plant.



White potato plants store the sugar produced during photosynthesis underground in the potato. Why does the potato store sugar this way?

- A. to return oxygen to the soil
 - B. to return nutrients to the soil in the winter
 - C. to provide an energy source for other organisms living underground
 - D. to provide an energy source for new plant growth in the spring
16. Finches living on different islands have beaks of different sizes and shapes. What factor is **directly** responsible for these differences?
- A. type of climate
 - B. sources of food
 - C. number of predators
 - D. locations of nesting sites

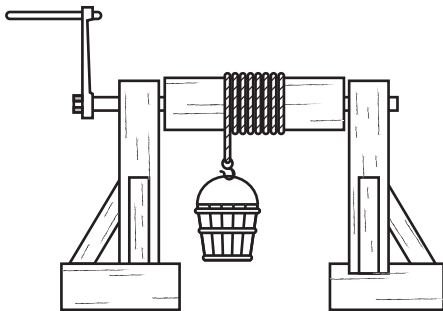
17. In 1839, the scientist Theodor Schwann stated that all animals are made of cells. Which technology **most likely** helped Schwann gather the evidence used to draw this conclusion?

- A. computer
- B. microscope
- C. prism
- D. telescope

18. Exoplanets are planets that have been observed orbiting distant stars outside of our solar system. Which type of scientist would **most likely** search for exoplanets?

- A. astronomer
- B. biologist
- C. chemist
- D. geologist

19. The diagram below shows a simple machine being used to lift a bucket of water.



Which simple machine does the diagram show?

- A. an inclined plane
- B. a screw
- C. a wedge
- D. a wheel and axle

20. The key below is used to identify some trees and shrubs on Grant-Kohrs Ranch in Montana.

Classification Key

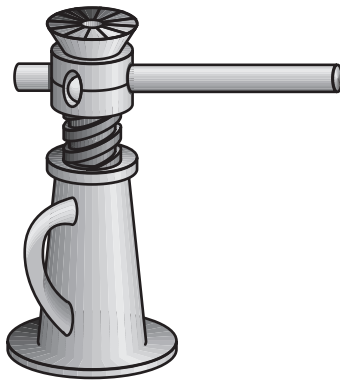
1. a. plant has a central trunk (tree) go to step 2
 b. plant has one or more upright stems (shrub) go to step 3
2. a. smooth, white bark; tooth-edged leaves with mid-vein quaking aspen
 b. whitish or gray grooved bark; oval leaves that are dark above, light below..... black cottonwood
3. a. evergreen leaves common juniper
 b. deciduous leaves (leaves that fall off in the winter) go to step 4
4. a. flowers form small cone-like seed structures water birch
 b. flowers form dense, white clusters chokecherry

Based on the key, which phrase describes a chokecherry?

- A. a tree with smooth bark and tooth-edged leaves
- B. a shrub with one or more upright stems and evergreen leaves
- C. a tree with flowers that form small cone-like seed structures
- D. a shrub with deciduous leaves and flowers in white clusters

21. The diagram below shows a jack, which is used for lifting objects.

Lifting Jack



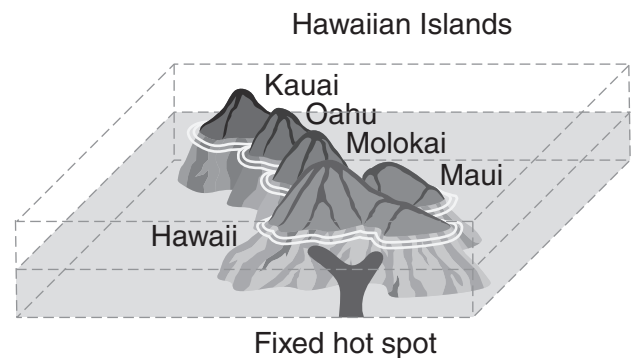
What two simple machines can be found in the lifting jack?

- A. lever and screw
 - B. pulley and screw
 - C. pulley and wedge
 - D. lever and wedge
22. Which substance is classified as a mixture?
- A. air
 - B. carbon dioxide
 - C. nitrogen
 - D. oxygen
23. A student is creating a dichotomous key to identify snakes. The key contains eight characteristics that can be used to identify the snakes. In a dichotomous key, how many choices are given for each characteristic?
- A. one
 - B. two
 - C. three
 - D. four

24. What causes day and night on Earth?

- A. the rotation of Earth on its axis
- B. the revolution of Earth around the Sun
- C. the changing distance between Earth and the Sun
- D. the changing distance between Earth and the Moon

25. The diagram below shows the Hawaiian Islands.



Which processes are directly involved in the formation of the Hawaiian Island volcanoes?

- A. sedimentation and compaction
- B. melting and cooling
- C. burial and uplift
- D. weathering and erosion

26. The table below shows three geologic time periods.

Period	Began (millions of years ago)	Ended (millions of years ago)	Organisms Present
Triassic	225	190	Many conifers present Modern coral, dinosaurs, and some mammals appear
Jurassic	190	136	Birds appear Dinosaurs present
Cretaceous	136	65	Flowering plants appear Dinosaurs present

What did geologists use to help determine when these time periods began and ended?

- A. the atomic clock
- B. equal time intervals
- C. fossil evidence
- D. tide cycles

27. Which object in our solar system is the largest?

- A. Earth
- B. Halley's comet
- C. Jupiter
- D. the Sun

Acknowledgments

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